CLAIMS

1. A method of calibrating at least two video cameras (1, 2) relative to each other when said two cameras constitute apparatus for stereoscopically filming (3) a portion of pathway (4) suitable for having any type of body traveling therealong, in order to detect the state of occupation of said portion of pathway, and in particular to detect incidents that might occur on said portion of pathway, the method being characterized in that it consists:

· in placing a plurality of marks on the surface (5) of the portion of pathway (4), said marks being distributed substantially:

· in ordered manner on a first group of first and second geometrical lines $D_1$, $D_2$ meeting at a first point $P_1$; and

· in such a manner that given points belonging respectively to the marks having the same order relative to the first point $P_1$ on said first and second geometrical lines $D_1$, $D_2$ are situated on a second group of fourth and fifth geometrical lines $D_4$, $D_5$ meeting at a second point $P_2$ that does not coincide with the first point $P_1$;

· in forming a video image of said portion of pathway (4) including said marks, using each of the two video cameras;

· in defining a characteristic point $P_c$ for each image of a mark in each of the two video images;

· in determining first and second image lines $D_{1i}$, $D_{2i}$ and fourth and fifth image lines $D_{4i}$, $D_{5i}$ from said characteristic points $P_c$;

· in determining a first image meeting point for the first and second image lines $D_{1i}$, $D_{2i}$ and a second image meeting point for the fourth and fifth image lines $D_{4i}$, $D_{5i}$ in each of the video images; and

· in processing the video signals delivered by each video camera in such a manner that these signals are

representative of two images suitable for being processed by stereovision.

2. A method according to claim 1, characterized by the fact that said plurality of marks ($M_{11}$, $M_{12}$, $M_{13}$; $M_{21}$, $M_{22}$, $M_{23}$; $M_{31}$, $M_{32}$, $M_{33}$) is at least nine in number, and that it consists additionally in forming, in the first group of lines, a third geometrical line $D_3$, and in the second group of lines, a sixth geometrical line $D_6$, and in determining by approximation, in each of the video images, a first image meeting point ($P_{1i1}$, $P_{1i2}$) constituted as being the point at which the first, second, and third image lines $D_{1i}$, $D_{2i}$, $D_{Di}$ meet, and a second image meeting point ($P_{2i1}$, $P_{2i2}$) considered as being the point at which the fourth, fifth, and sixth image lines $D_{4i}$, $D_{5i}$, $D_{6i}$ meet.

3. A method according to claim 1 or claim 2, characterized by the fact that the processing of the video signals delivered by each of the video cameras so that the signals are representative of two images suitable for forming a stereoscopic video image is performed by computer means.

4. A method according to claim 1 or claim 2, characterized by the fact that the processing of the video signals delivered by each of the video cameras so that the signals are representative of two images suitable for forming a stereoscopic video image consists in adjusting the two video cameras relative to each other until, by substantially superposing the two video images given by said two video cameras, the first and second image meeting points ($P_{1i1}$, $P_{2i1}$) of one video image are at a determined distance from the first and second image meeting points ($P_{1i2}$, $P_{2i2}$) of the other video image, in order to obtain a stereoscopic effect.

5. A method according to any one of claims 2 to 4, characterized by the fact that it consists in defining the first, second, and third geometrical lines $D_1$, $D_2$, $D_3$ in such a manner as that the first point $P_1$ is situated at infinity.

6. A method according to any one of claims 2 to 5, characterized by the fact that it consists in defining the fourth, fifth, and sixth geometrical lines $D_4$, $D_5$, $D_6$ in such a manner that the second point $P_2$ is situated at infinity.

7. A method according to claims 2 to 6, characterized by the fact that it consists in repositioning, in the video images, the two groups of three lines each, firstly $D_{1i}$, $D_{2i}$, $D_{3i}$ and secondly $D_{4i}$, $D_{5i}$, $D_{6i}$, in such a manner that they intersect at a single point, said meeting points determining said image meeting points ($P_{1i1}$, $P_{1i2}$) and ($P_{2i1}$, $P_{2i2}$).

8. A method according to claims 2 to 7, characterized by the fact that it consists in defining said marks in such a manner that they are substantially identical to one another.

9. A method according to claim 7, characterized by the fact that it consists in distributing said marks ($M_{11}$, $M_{12}$, $M_{13}$; $M_{21}$, $M_{22}$, $M_{23}$; $M_{31}$, $M_{32}$, $M_{33}$) in such a manner that they are situated on at least one of the first and second groups of geometrical lines $D_1$, $D_2$, $D_3$ and $D_4$, $D_4$, $D_6$ at equal distances from one another.

10. A method according to any one of claims 4 to 9, characterized by the fact that it consists in adjusting each video camera (1, 2) by modifying at least one of the following of its parameters: its elevation, its azimuth, its optical field of view, its resolution.

11. A method according to any one of claims 1 to 10, characterized by the fact that it consists in determining the characteristic point $P_c$ of each mark image by using at least one of the following parameters: the intersection of at least two lines interconnecting four non-coincident points of the mark image respectively in pairs, the center of gravity of the tone of the mark image, the center of gravity of the total area of the mark image.

12. A method according to any one of claims 1 to 11, characterized by the fact that it consists, when said marks are substantially rectangular in shape, in determining the given point ($P_{d11}$, $P_{d12}$, $P_{d13}$; $P_{d21}$, $P_{d22}$, $P_{d23}$; $P_{d31}$, $P_{d32}$, $P_{d33}$) by at least one of the following points: the point of intersection of the two diagonals of the rectangle of each mark, one of the vertices of the rectangle.

13. A device implementing the method according to claim 3, the device being characterized by the fact that it comprises:

· a plurality of marks ($M_{11}$, $M_{12}$, $M_{13}$; $M_{21}$, $M_{22}$, $M_{23}$; $M_{31}$, $M_{32}$, $M_{33}$) situated on the surface (5) of a portion of pathway (4) respectively at the points of intersection between two groups of at least two geometrical lines that meet at a first point $P_1$ and at a second point $P_2$;

· a support (11) suitable for being installed in direct view of said portion of pathway;

· at least two video cameras (1, 2) mounted on said support, each camera having an outlet (12, 13) for video signals representative of video images given by the corresponding video camera; and

· a programmable video signal processor and analysis unit (25) having inlet terminals connected to the outlets (12, 13) of the two video cameras.

14. Apparatus for implementing the method according to claim 4, the apparatus being characterized by the fact that it comprises:

· a plurality of marks ($M_{11}$, $M_{12}$, $M_{13}$; $M_{21}$, $M_{22}$, $M_{23}$; $M_{31}$, $M_{32}$, $M_{33}$) situated on the surface (5) of a portion of pathway (4) respectively at the points of intersection between two groups of at least two geometrical lines that meet at a first point $P_1$ and at a second point $P_2$;

· a support (11) suitable for being installed in direct view of said portion of pathway (4);

· at least two video cameras (1, 2) each having a respective outlet (12, 13) for video signals representative of video images given by the corresponding video camera, each camera having a variable focal length lens (14, 15) controllable from a control inlet (16, 17);

· controllable means (18, 19) for mounting each of the two video cameras to pivot relative to said support (11) about at least two non-coincident axes, said means being suitable for being controlled from control inlets (20, 21); and

· a programmable video signal processor and analysis unit (25) having inlet terminals connected to the outlets (12, 13) of the two video cameras (1, 2), and outlet terminals connected to the control inlets (20, 21) of the controllable means (18, 19) for mounting each of the two video cameras to pivot relative to said support (11) about at least two non-coincident axes, and to the control inlets (16, 17) of the variable focal length lens (14, 15) of each video camera.